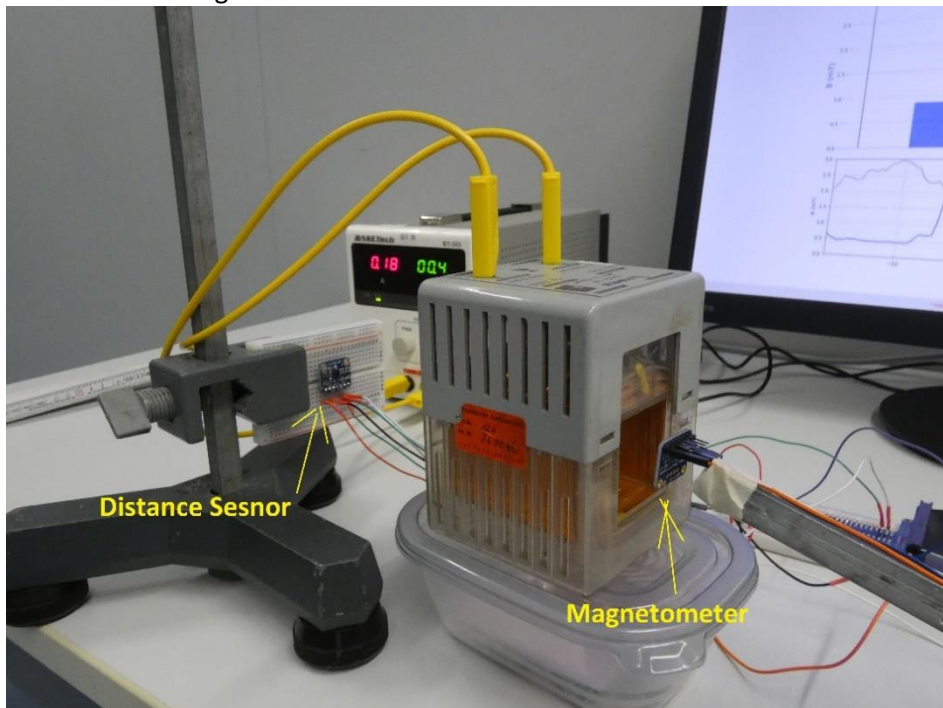# Magnetic Flux Density of a Coil of Wire

PhyPiDAQ
Digital Measurement System Based on Raspberry Pi

Objectives:

- Measure the magnetic flux density of a coil of wire in its core and in its external surroundings by connecting the MLX90393 triple-axis magnetic sensor and the Time-of-Flight VL53L0X Motion Sensor at the Raspberry Pi.
- Use various capabilities of the PhyPiDAQ-Software to record and visualize the magnetic induction components and the resultant magnetic induction at different positions inside and outside different coils.
- Employ spreadsheets like LibreOffice or Excel to the recorded data to analyse the relationship between the magnetic induction and distance measured from to the centre of the coil.

Magnetic flux density against position along the axis of a coil recorded with the MLX90393 triple-axis magnetic sensor and the VL53L0X Motion Sensor.

Configurations:

-Configure the experiment and the two sensors, the VL53L0X distance sensor and the MLX90393 triple-axis magnetic sensor on the Graphical Interface of the PhyPiDAQ Software according to

```
distance_magneticfield.daq
MLX90393Config.yaml
VL53LxConfig.yaml
```

Measurements

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